AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in this application.

1. (currently amended)   A method of estimating a time-to-collision (TTC) of a vehicle with an object comprising the step of:

(a) acquiring a plurality of images of the object at known time intervals between the times t at which the ~~images of the plurality of~~ images are acquired; ~~and~~

(b) determining a momentary~~the time-to-collision (TTC) solely~~ $T_v(t)$, which is equal to an instantaneous distance between the vehicle and the object at time t divided by an instantaneous relative velocity, from information derived from the images and the time intervals[[,]];

~~and~~wherein said

determining the time-to-collision (TTC) based on a rate of change over times t of momentary time $T_v(t)$. ~~relative velocity and relative acceleration between the vehicle and the object~~.

2. (currently amended)   The method according to claim 1, further comprising the step of:

(c) determining a function of the relative velocity from the images and using the function of the relative velocity to determine TTC.

3. (currently amended)   The method according to claim 1,

wherein said (b) determining ~~the time-to-collision (TTC)~~a momentary time $T_v(t)$ ~~includes determining~~is based on a change in scale of ~~an~~ image~~s~~ of at least a portion of the object ~~and using the change in scale for determining a function of the relative velocity~~.

4. (original)   The method, according to claim 1, further comprising the step of

(c) determining a function of the relative acceleration from the images and using said function of the relative acceleration to determine the TTC.

5. (original)   The method according to claim 4, wherein said (c) determining said function of the relative acceleration includes determining a time derivative of a function of the relative velocity.

6. (currently amended)The method according to claim 3, wherein said determining ~~a~~the change in scale includes determining a ratio between a dimension of the object in a first one of the images and the same dimension of the object in a second one of the images.

7. (currently amended)   The method according to claim 6, wherein said determining ~~a function of the relative velocity~~the time-to-collision (TTC) includes determining ~~a function~~ the momentary time $T_v(t)$ = [1/(S(t)-1)]ΔT where S is the ratio and ΔT is ~~a~~the time ~~lapse~~interval between ~~the acquisition of~~ two images of the images.

8. (currently amended)   ~~The method according to claim 7~~A method of estimating a time-to-collision (TTC) of a vehicle with an object comprising the step of:
    (a) acquiring a plurality of images of the object at known time intervals between the times at which the images of the plurality of images are acquired; and
    (b) determining the time-to-collision (TTC) from information derived from the images and the time intervals, wherein said determining the TTC is based on a relative velocity and relative acceleration between the vehicle and the object, wherein said (b) determining the time-to-collision (TTC) includes determining a change in scale of an image of at least a portion of the object and using the change in scale for determining a function of the relative velocity, wherein said determining the change in scale includes determining a ratio between a dimension of the object in a first one of the images and the same dimension of the object in a second one of the images, wherein said determining a function of the relative velocity includes determining a function T_v = [1/(S-1)]ΔT, where S is the ratio and ΔT is a time lapse between two images of the images, wherein a function of the relative acceleration is determined based on a time derivative T'_v, of function T_v.

9. (original)   The method according to claim 8, wherein the TTC is determined responsive to a function of T_v and T'_v.

10. (original)   The method according to claim 8, wherein TTC is determined responsive to the expression: TTC (t) = $[T_v/C)][1-(1+2C)]^{1/2}$, where C = T'_v+1.

11. (original)   The method according to claim 1, further comprising the step of:
        (e) determining whether the vehicle and the object are on a course that leads to a collision at the TTC.

12. (currently amended)   A method according to claim 11, wherein said determining whether the vehicle and object are on a course that leads to a collision at the TTC includes:
        (i) determining respective motions of at least two features of the object relative to the vehicle from the images; and
        (ii) determining, from the relative motions, whether at TTC if the real space horizontal coordinates of said at least two features straddle the real-space horizontal coordinate of at least a part of the vehicle.

13. (currently amended)   A system which performs the method steps of claim 1, for determining the time-to-collision (TTC) of the vehicle with the object, the system comprising:
        (a) at least one camera mounted in the vehicle and adapted for said acquiring of the images at the known time intervals; and
        (b) a processor which is configured in real time to calculate the momentary time $T_v(t)$ equal to the instantaneous distance between the vehicle and the object at time t divided by the instantaneous relative velocity from information derived from the images and the time intervals, and, based on the rate of change over time t of momentary time $T_v(t)$, is configured to calculate in real time the time-to-collision (TTC)solely from information derived from the images and the time

~~intervals, based on the relative velocity and the relative acceleration between the vehicle and the object~~.

14. (original)   The system, according to claim 13 wherein the at least one camera is a single camera.

15. (currently amended)   The system, according to claim 13 , further comprising:
        (c) an alarm apparatus <u>operatively connected to the processor, the alarm apparatus configured</u> for alerting a driver of the vehicle to a possible collision with the object responsive to the TTC.

16. (currently amended)   The system, according to claim 13, further comprising:
        (c) an alarm <u>apparatus, operatively connected to the processor, wherein the alarm apparatus is configured to alert</u>~~which alerts~~, based on the TTC, at least one person outside of the vehicle ~~to~~<u>of</u> a possible collision of the vehicle with the object.

17. (original)   The system, according to claim 13, wherein the at least one camera images an environment in front of the vehicle.

18. (original)   The system, according to claim 13, wherein the at least one camera images an environment in back of the vehicle.

19. (original)   The system, according to claim 13, wherein the at least one camera images an environment to a side of the vehicle.

20. (currently amended)   A method of determining whether a vehicle and an object are on a collision course, the method comprising the steps of.
        (a) acquiring a plurality of images of the object from a position ~~of~~<u>in</u> the vehicle at ~~each of~~ a

plurality of known times;

(b) determining, from the images, respective motions in image space of at least two features of the object relative to the vehicle;

(c) determining from the images an estimate of a ~~possible~~ time to collision (TTC) of the vehicle and the object; and

(d) determining from the ~~relative~~ motions whether at the TTC, the real-space horizontal coordinates of said at least two features straddle the real-space horizontal coordinate of the position in~~at least a part of~~ the vehicle, whereby the vehicle and object are on a collision course.

21. (original)   The method according to claim 20, wherein said (b) determining respective motions of the at least two features includes determining lateral motion of the features relative to the vehicle.

22. (original)   The method according to claim 20, wherein said (d) determining includes extrapolating lateral locations of the at least two features at TTC from the respective motions at the known times of said acquiring.

23. (original)   A method according to claim 20, wherein said (c) determining includes determining TTC solely from the images and time intervals between the known times of said acquiring of the images.

24. (currently amended)   A system which performs the method steps of claim 20, for determining whether a vehicle and an object are on a collision course, the system comprising:

(a) ~~at least one~~ a camera mounted in the vehicle and adapted for said acquiring of the images; and

(b) a processor which determines from the images, respective motions of at least two features of the object relative to the vehicle and from the images determines an estimate of a possible time to collision (TTC) of the vehicle and the object; and from the relative motions

determines whether at the TTC, <u>the real space horizontal coordinates of</u> the first and second features straddle <u>the real-space horizontal coordinate the camera</u><s>at least a part of the vehicle</s>.

25. (new)   A method of estimating a time-to-collision (TTC) of a vehicle with an object comprising the step of:

acquiring a plurality of images of the object at known time intervals;

determining a relative scale of the object in the images; and

determining the time-to-collision (TTC) based on the relative scale and the time intervals, wherein the time-to-collision (TTC) is responsive to the relative velocity and the relative acceleration between the vehicle and the object.

26. (new) The method of claim 25, wherein said determining the relative scale and said determining the time-to-collision are performed while avoiding a real-space distance measurement to the object and while avoiding a real-space dimension measurement of the object.